Illinois Department of
Natural Resources
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Pat Quinn, Governor
Marc Miller, Director

November 24, 2009

Mr. Larry Schuldt, Executive Director
Sterling Park District
1913 Third Ave.
P. O. Box 958
Sterling, IL 61081-0958

RE: Westwood Wind Turbine Proposal, Sterling Park District, Whiteside County
Endangered Species Consultation
EcoCAT Review # 0911847

Dear Mr. Schuldt:

The Department has received information from Natural Resources Consulting, Inc., on behalf of the Sterling Park District, for this proposed action in Township 21 North, Range 7 East, Section 18, for consultation in accordance with the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

Because this is potentially only a single turbine, the Department has evaluated potential resource conflicts limited to a ten-mile radius. For this purpose, the Department has assumed the turbine will be a *Pawan-Shakthi 600* or a smaller machine.

Based on the information *currently available* to the Department, it is our biological opinion that construction and operation of the turbine is unlikely to adversely affect the essential habitat of state-listed species documented in the vicinity, or to adversely modify any Site listed on the Illinois Natural Areas Inventory.

However, given the presence of State-listed migratory birds in the area, it remains possible that individual protected animals may suffer injury or death due to collisions with the turbine, while other protected species may be taken during construction or operation of the machine. Though this probability is not high, the District may wish to consider whether it is prudent to seek Incidental Take Authorizations from the Department to cover such events. The **Ornate Box Turtle**, *Terrapene ornata*, recently listed as "threatened," may be present in the area, but the Department lacks sufficient data to state an opinion concerning it. The Department recommends surveys for the Ornate Box Turtle in the late spring and early summer to determine if it is present and, if so, where and in what numbers.

The riparian woodlands west, north, and east of the proposed turbine site likely provide roosting habitat for migratory bats vulnerable to turbine blade collisions. Although most bat fatalities occur during the late summer migratory period, this location may result in an elevated mortality rate during all seasons bats are present. The District may wish to give consideration to pre-construction acoustic surveys of bat activity at the site to evaluate this risk.

The Attachment to this letter describes the Department's evaluation in more detail with respect to each resource considered.

The Department notes that other governmental bodies may be involved in authorizing this action. In 2007, the General Assembly amended the County Code, removing the ability of counties to authorize wind energy conversion systems at any location within 1.5 miles of a municipality, unless that County had a wind turbine siting ordinance in place at the time of the effective date of the amendment. [Please see 55 ILCS 5/5-12020.] The Department does not know whether Whiteside County had such an ordinance in place by the deadline. It may be advisable to inquire whether the City of Sterling may exercise jurisdiction over this project. If so, these materials may be supplied to the City as evidence of satisfaction of the consultation requirement, although the City may choose to conduct its own consultation with the Department.

The Department is unable to state that no listed species exist within the project footprint, nor can it exclude the possibility that listed species other than those mentioned in the Attachment exist in the vicinity. Should a protected species be encountered during project implementation, compliance with applicable statutes and regulations is required.

The Department's consultation process for this proposal is terminated, unless the District desires additional information or advice related to this proposal. However, consistent with Part 1075, the District must notify the Department of its disposition of recommendations pertaining to species or Sites subject to the consultation process.

Termination does not imply the Department's approval or endorsement of this proposal. Consultation is valid only for a two-year period; if the proposed action is not implemented in that time, a new consultation will be necessary. Should you need additional information regarding the consultation process, or should you have any questions, please do not hesitate to contact me.

Sincerely,

Keith M. Shank
Division of Ecosystems and Environment
keith.shank@illinois.gov
(217) 785-5500

Attachment

cc: Bill Poole, Natural Resources Consulting, Inc.

ATTACHMENT

Sterling Park District
Westwood Wind Turbine
Whiteside County

Wildlife Impact Recommendations

The Sterling Park District may wish to consider management decisions to monitor, assess, and report possible fish and wildlife effects of the proposed action in the following ways.

- Implement permanent engineering solutions to soil erosion and water quality issues, particularly with reference to service and access roads.

- Perform pre-construction assessments of avian and bat usage within the project area at an appropriate scale. Such assessments should include inventories of habitat types in and near the project area, including crop types, and observations of both migratory and resident bird usage. Consideration of all seasons should be included, although spring migration for birds is anticipated to be of greatest interest. Acoustic bat activity monitoring is also appropriate. The proximity to bat roosting habitat may result in elevated mortality during all seasons bats are present. Specific federally-listed and state-listed species of interest are discussed in the following narrative.

- Risks to endangered or threatened species should be evaluated, with site-specific surveys if needed, and appropriate regulatory permits sought for potential incidental taking of protected animals. Particular consideration should be given to surveying for the **Ornate Box Turtle.**

- Perform at least one year of post-construction monitoring and assessment, noting any changes in wildlife usage patterns and evaluating potential causes of such changes.

- Consideration should be given to periodic repetition of the post-construction wildlife surveys during the life of the project.

Natural resources within, or in the vicinity of, the proposed wind energy system are listed below, along with a discussion of potential interactions with each.

State Lands; Nature Preserves; Land & Water Reserves; and INAI Sites

Lyndon Prairie Nature Preserve

The Lyndon Prairie Nature Preserve [also the Lyndon-Agnew Railroad Prairie Illinois Natural Areas Inventory (INAI) Site] is a 61-acre linear corridor parallel to Interstate Highway 88, located about 6.6 miles southwest of the Westwood Recreation Center.

Because of a lack of intervening terrain, vegetation, or other obstructions, a turbine at Westwood Recreation Center will likely be visible to persons within the Nature Preserve, even at this distance. (A *Pawan-Shakthi 600* turbine on a 65-meter tower will have blade tips at nearly 300 feet above ground level.) However, because the Lyndon Prairie Nature Preserve lies directly adjacent to Interstate Highway 88, the potential to visualize pre-settlement conditions within the Preserve is inherently low. The visibility of the turbine will not be obtrusive to site visitors, and it will not compromise or degrade any existing values of the Preserve.

Lake Como State Natural Area

This 150-acre property of the Department of Natural Resources is located at the confluence of Elkhorn Creek with the Rock River, about four miles south-southwest of the Westwood Recreation Center. The Lake Como site supports a heron rookery, and a **Bald Eagle** nest site (2001) is located just across the river. The north boundary of the site is marked by Interstate Highway 88.

Although closer to the turbine site than Lyndon Nature Preserve, and though the topography between is equally low, I-88 is elevated at this point above the Rock River flood plain, obstructing the view in the direction of Westwood. The turbine is sufficiently remote to have no effect on the Bald Eagle nest site or the heron rookery, but Lake Como does provide a locus for these migratory birds, whose movements around the area may incur some risk of colliding with the turbine.

Hennepin Canal State Trail

This IDNR historic property approaches Rock Falls from a point approximately 4.5 miles due south of the Westwood Recreation Center. The Rock River valley lies between. Apart from a forested island in the River itself, there are no visual obstructions between the Canal corridor and the turbine site; a 300-foot tall machine will likely be visible to a keen-eyed observer located on the IDNR property. However, it will certainly not be obtrusive and will be unlikely to be noticed by most Trail users. The point at which the Canal enters the Rock River, though nearer, at 3.2 miles, lies in an urban area where nearby buildings likely will obstruct any view of the turbine.

Coleta Ponds State Fish & Wildlife Area

This 12-acre IDNR property lies about eight miles north-northwest of the Westwood Recreation Center. However, it lies in the Spring Creek watershed, beyond the Elkhorn Creek watershed, and intervening terrain will render the Westwood turbine invisible from this location.

Documented Endangered or Threatened Species in the Vicinity

Barn Owl, *Tyto alba*

A breeding record (1990) exists for the Barn Owl 2.7 miles northwest of the Westwood Recreation Center. This Owl remains exceedingly rare throughout Illinois.

This endangered raptor nests in larger tree cavities and in barns or abandoned buildings, sometimes within city limits. It hunts both open woodlands and grasslands; its preferred prey consists of small rodents such as mice and voles.

The main risk posed by most wind power facilities to this species is the removal of suitable nesting trees and abandoned buildings to facilitate transportation of wind turbine components or to maximize wind energy conversion. Both trees and buildings should be examined for Barn Owl occupancy prior to removal. This particular system may also affect the suitability of the adjacent riparian woodlands as hunting or breeding habitat due to noise and flicker effects. (Flicker will affect the adjacent woodlands most significantly in the winter, in this case.)

If this species is present in the area, this system is likely to adversely modify its essential habitat. One measure which could reduce the risk of mortality to this species is to manage the vegetation in the immediate vicinity of the turbine to reduce the numbers of potential prey species.

Loggerhead Shrike, *Lanius ludovicianus*

The Illinois Endangered Species Protection Board officially elevated this species to the status of "endangered" on October 30, 2009, although this will not alter the legal protections afforded this species.

The Shrike has not been reported as breeding nearby since 1989, when it was reported from two locations over eight miles north of the Westwood Recreation Center. However, this species is broadly distributed across Illinois, and a lack of records provides no assurance the species is absent from suitable breeding habitat in the vicinity or does not pass through the project area as a migrant.

The Loggerhead Shrike is adapted to the savanna conditions of interspersed grasslands, shrubs, and trees. This species has been adversely affected by the decline in animal husbandry and the abandonment of the "shelter-belt" fence-row conservation practice, which has severely reduced both breeding and foraging habitat. The Shrike, also known as the "butcher bird," needs thorny trees and shrubs, even barbed wire, on which to impale its prey, which may be left for several days before being eaten. Areas which support large insects and small rodents, major food items, are also necessary. Due to losses of suitable habitat, Loggerhead Shrikes may attempt reproduction in trees near human habitations and in other areas where they would normally not be expected to breed.

The “edge” habitat associated with the on-site woodlands may be attractive to this species.

The primary consideration for wind energy facilities is the potential for further loss of remaining habitat, if fence-rows--or even single trees-- are cleared to avoid wind turbulence or to improve turbine exposure, or if road-side trees are cleared to create turning radii for turbine carriers or to establish power lines. A pre-construction survey to identify the presence of Shrike nests should be conducted for areas with suitable habitat, if work is proposed during the breeding season, in order to avoid direct mortality. "Resident" foraging birds are not thought to be at significant risk from operating wind turbines, but potential risks to migrants should be considered.

Gravel Chub, *Erymistax x-punctata*

The Gravel Chub is a small (~four inches) minnow-like fish which prefers streams and rivers with firm sand and gravel substrates; it is intolerant of heavily silted waters. This fish is listed by Illinois as "threatened." Most records are found in the Rock River and its tributaries.

Recent collections have been made from the Rock River in the vicinity of Sterling, and a 1963 record exists from the Elkhorn Creek tributary which runs just north of the Westwood Recreation Center. The age of a record is an unreliable indicator of current distribution, especially for aquatic species, so the Chub should be presumed to be present near the turbine site.

Erosion, siltation, and sedimentation represent the greatest threats to this species. Construction activities associated with wind turbines, if mishandled, can result in both short-term and long-term erosion. Careful development and implementation of a storm water management plan and compliance with a National Pollutant Discharge Elimination System (NPDES) storm water construction permit should avoid or minimize such impacts.

Lake Sturgeon, *Acipenser fulvescens*

A four-foot long Lake Sturgeon was taken from the Rock River below the lower dam in Sterling in April 2009. This is the river segment which includes the mouth of Elkhorn Creek. Though typically found in larger streams and rivers, several Lake Sturgeons caught by fishermen this year have been at dam tail-waters on fairly small creeks.

Sturgeon feed mainly on detritus and invertebrates; siltation and sedimentation are detrimental to their habitats. Any adverse modification of in-stream habitat derived from a wind turbine would be related to soil erosion stemming from construction. Diligent compliance with NPDES permit requirements should adequately minimize or avoid any such effects to habitat in Elkhorn Creek.

Black Sandshell Mussel, *Ligumia recta*

The Black Sandshell is a "threatened" mussel species most-recently documented in this area from the Rock River at Sterling (2001). Clean sand, gravel, and cobble substrates are preferred habitat. The Black Sandshell is found most often in larger rivers where its primary larval fish hosts, the Walleye and Sauger, are most numerous. However, the Black Sandshell can also parasitize a number of other fish species, including the Largemouth Bass and other sunfishes, and so can be found in creeks with populations of these fish. The Black Sandshell is probably present in Elkhorn Creek.

As with other aquatic fauna, the main threat from wind generators is soil erosion associated with their construction. Effective erosion controls represent the best means to minimize or avoid adverse effects to this species.

Blanding's Turtle, *Emydoidea blandingii*

Effective October 30, 2009, the Blanding's Turtle was listed by Illinois as "endangered."

The Blanding's Turtle, distinguishable by its solid bright yellow lower jaw and throat, has been documented most recently from two locations in Whiteside County nearly ten miles to the north of the Westwood Recreation Center. One was adjacent to Rock Creek, while the other was found in a wetland near Buffalo Creek. In Northern Illinois, the species frequently ascends waterways to access open upland areas for nesting and will use streams to travel considerable distances.

This species is known to move widely across the landscape, following streams and drainage ditches, but also moving overland when necessary. Overland movements typically occur at night. It is believed to demonstrate fidelity to nesting and hatching areas, attempting to return to its own natal site for egg-laying. The species is known to nest farther from the water than any other aquatic turtle in North America, at times nesting up to a mile inland. The species' life cycle appears to be compatible with row-crop agriculture, since egg-laying occurs in late spring or early summer after planting, and hatching usually occurs before harvest.

The main threats to this species are nest predation by skunks, raccoons, and other mammalian predators, road-kill, and poaching (illegal collection for the pet trade). Wind energy construction activities may result in disturbance of traditional nesting areas, the destruction of nests, the entrapment of individuals in excavations, and road-kill.

Workers on the project should be educated about this species' appearance and behavior; excavations left open overnight should be covered and inspected before filling: and any Blanding's Turtle observed should be documented with photographs and reported to the Department of Natural Resources. A Turtle may not be moved to facilitate the project unless the applicant has obtained an Incidental Take Authorization.

Endangered or Threatened Species Potentially in the Vicinity

Ornate Box Turtle, *Terrapene ornata*

Effective October 30, 2009, the Ornate Box Turtle was listed by Illinois as "threatened." Specimens have been collected from Whiteside County and surrounding Counties.

This terrestrial turtle is usually found in open grasslands and fields, in contrast to its cousin, the Eastern Box Turtle, which is usually found in woodlands. This turtle hibernates underground from late September through April, so it cannot evade disturbance during that period. Its carapace carries elaborate markings, including a yellow bar along the spine, which distinguishes

it from the other species. While it appears to be more common in sandy soils, it is not restricted to them.

As with many turtles, road-kill and over-collecting are major causes of decline. In a recent study of a northwestern Illinois population, a significant number of individuals exhibited carapace scarring from farming equipment (discs and harrows), illustrating that this species may frequently be found in rowcrop fields.

Suitable habitat for this species may be present in the project area. Project workers should be educated as to its appearance and habits, remain alert for turtles on roads and in fields, and report any suspected Ornate Box Turtles to supervisors. The Department of Natural Resources should be promptly notified if any Ornate Box Turtles are identified. It is unlawful to move or capture an Ornate Box Turtle to facilitate the project without first obtaining an Incidental Take Authorization from the Department.

Upland Sandpiper, *Bartramia longicauda*

This State-listed threatened grassland bird prefers habitat of short-grass prairie/pasture. For many years this ground-nesting species was thought to be area sensitive, requiring ten acres or more of grassland habitat for successful breeding. However, many recent breeding efforts are occurring in grassed waterways of row-crop fields, which provide considerably less than ten acres of habitat, and from along roadsides.

Breeding records for the Upland Sandpiper exist at the Nachusa Grasslands, in northern Lee County, about 20 miles east-northeast, as well as at Mineral Marsh in Henry County, about 26 miles to the south.

The Upland Sandpiper engages in an aerial courtship display which passes through the rotor-swept elevations of utility-scale wind turbines, placing it at risk of collision mortality. Whether this species will be sensitive to the proximity of vertical structures, or to shadow "flicker" on potential nesting areas, has not been demonstrated, but such shadows may prove to be an issue. Some photographs of this species were obtained in 2008 at locations just over a mile from existing wind turbines, suggesting they may tolerate the visibility and motion of wind turbines at that distance.

Northern Harrier, *Circus cyaneus*

The State-listed endangered Northern Harrier (sometimes called the Marsh Hawk) is a ground-nesting grassland hawk. It has not been recently documented as nesting within 20 miles of this site, but is a frequently-observed migrant in most counties. The species has a statewide range. While many sources indicate the species needs large open areas of habitat, Illinois studies have demonstrated this hawk can use relatively small patches of habitat for successful breeding, especially in the vicinity of larger habitats. Breeding is often associated with wetlands such as marshes, sedge meadows, and wet prairies.

While most hunting activities occur at fairly low altitudes, below typical rotor-swept elevations, hunting can expose this bird to collision risk. Like the Upland Sandpiper, this species engages in an aerial courtship display which places it at risk of collision with wind turbines. Wind turbine construction and operation may alter concentrations of prey species.

This hawk relies heavily on its acute hearing to locate prey, and turbines might adversely affect their ability to hunt nearby, reducing available food resources.

Although this hawk typically flies at low altitudes while hunting, a percentage of flights do occur at elevations where turbine rotors could present a collision threat. If pre-construction surveys indicate use of the project area by migrant Harriers, post-construction surveys should be performed to determine whether the Harrier continues to hunt territories in proximity to turbines. If so, the risk of taking should be carefully evaluated.

Short-Eared Owl, *Asio flammeus*

The endangered Short-Eared Owl nests and winters in grasslands and wetlands. Whiteside County lies within both breeding and wintering ranges, although breeding Short-Eared Owls have not been reported in Whiteside County since they were listed. The nearest breeding record is at the Sand Prairie State Natural Area in Lee County,13 miles to the south of Sterling.

Highly nomadic, the Short-Eared owl depends heavily on vole and mouse populations, and the size of its breeding and hunting territories varies inversely with prey population sizes. When prey populations are high, owls may be ground-roosting every few meters in suitable habitat. The Northern Harrier often harasses this Owl, stealing its food.

This Owl's hunting flights are often less than ten feet off the ground (a circumstance which makes this bird highly vulnerable to collisions with vehicles); during aerial mating rituals, flights occur at typical wind turbine rotor-swept height. This Owl is highly dependent on its acute hearing to locate and seize prey. The degree to which noise from wind turbines may interfere with predation behavior is unknown.

The effects of wind turbines on Short-Eared Owls may be heavily influenced by the proximity of turbines to breeding, roosting, and hunting areas. Once turbines are built, this proximity relationship will be subject to change as land owners alter land management practices. This is likely to be of concern mainly if attractive habitat for Owls and their prey is created within or near the turbine following construction.

Yellow-Headed Blackbird, *Xanthocephalus xanthocephalus*

Illinois' breeding populations of this species are found mainly in the Chicago area, although a breeding site does exist at the Green River State Fish & Wildlife Area about sixteen miles southeast of the Westwood Recreation Center.

Contrary to most people's expectations, the Yellow-Headed Blackbird migrates east and west through Northern Illinois. The Rock River valley and its associated wetland complexes provide

staging areas for this movement, so the main risk to this species is that of collision risk during migration flights in the spring and fall.

Only the males display the signature yellow head plumage; females resemble those of other black bird species and are harder to distinguish. During migration this species may congregate with other species of black birds, making identification of females more difficult. Among black birds, only Starlings are not protected by federal law, so apparent casualties of black birds, even if not endangered, still give cause for concern.

Migratory Birds

Bald Eagle, *Haliaeetus leucocephalus*

The Bald Eagle, de-listed under the federal *Endangered Species Act* last year, was recently de-listed by Illinois, effective October 30, 2009. It remains protected under the *Bald and Golden Eagle Protection Act* and the *Migratory Bird Treaty Act*, each as stringent as the better-known *Endangered Species Act*.

Three Bald Eagle nest locations associated with the Rock River occur within ten miles of this location. However, Illinois has experienced a significant increase in Bald Eagle nests over the last few years, and many new nests have not been tallied. Nests have been appearing on smaller tributaries of larger rivers in areas where Eagles have not been seen for years, and it may be assumed the Rock River Basin reflects this trend. Hence, it is likely that new Eagle nests will appear in the area during the turbine's operational life.

In addition, Illinois now has the highest population of wintering Bald Eagles in the continental United States. They tend to be concentrated around major rivers, cooling lakes, and other waters likely to remain ice-free. The Sterling dam tail-waters provide such a location for wintering Eagles. However, during migration, Eagles frequently fly overland, and night roosts are often located in woodlands away from the River. Thus, while the wind energy project is unlikely to pose any direct threat to known Eagle nests and their surrounding hunting territories, there may be some collision risk for wintering and migrating Eagles. To the Department's knowledge, there have been no documented cases of Bald Eagle mortality due to wind turbines.

As of November 10, 2009, the US Fish & Wildlife Service has adopted regulations which allow the issuance of permits for the incidental taking of Bald Eagles. If pre-construction or post-construction observations indicate an elevated risk of taking a Bald Eagle, the District should consider seeking such a permit.

Bats

Investigation of bird mortality associated with turbines has led to the discovery that significant numbers of bats are killed by wind turbines, at a rate several times higher than birds, and potentially at an unsustainable level.

These bats are members of migratory species with seasonal migration periods. Most casualties occur during the "fall" migration period, from August through October, for reasons that remain unclear. This is true regardless of the proximity of the nearest potential roosting trees.

At this site, the near proximity of woodlands on three sides containing a riparian corridor may increase the potential for significant bat mortality, both during and prior to the start of the migratory season. However, it is also possible that the operating noise of the turbine may reduce the numbers of bats (and other wildlife, for that matter) roosting in this area. (The manufacturer of the *Pawan-Shakthi 600* does not provide machine sound data on its web-site.)

None of the bat species currently listed by Illinois as endangered or threatened are known to occur in Whiteside County, but the status of the species which are present may change with the proliferation of hundreds, if not thousands, of commercial-scale wind turbines. It may be prudent to become informed of which species are present in the vicinity, should their listing status change in the future.

At larger wind firms, the Department often recommends a pre-construction acoustic monitoring study of bat activity to aid in evaluating the risks of mortality, but this technique may not be appropriate for only one machine. A brief mist-netting capture-and-release study along the stream corridor adjacent to the turbine site may suffice to identify which species are present and roughly estimate their numbers.

If the numbers present warrant, a post-construction carcass-count mortality study could be conducted. If typical numbers of bats are killed during the migration season, the District may wish to consider some form of mitigation.

A promising technique, known as "curtailment," has been successful in some large-scale experiments. In these cases, the "cut-in" wind speed of the turbine has been raised to avoid turbine operation at low wind-speeds during evening hours, when bats are present and power yield is nominal. This method has been calculated to reduce bat mortality by between 75-90% while sacrificing only 1% or 2% of potential power output.